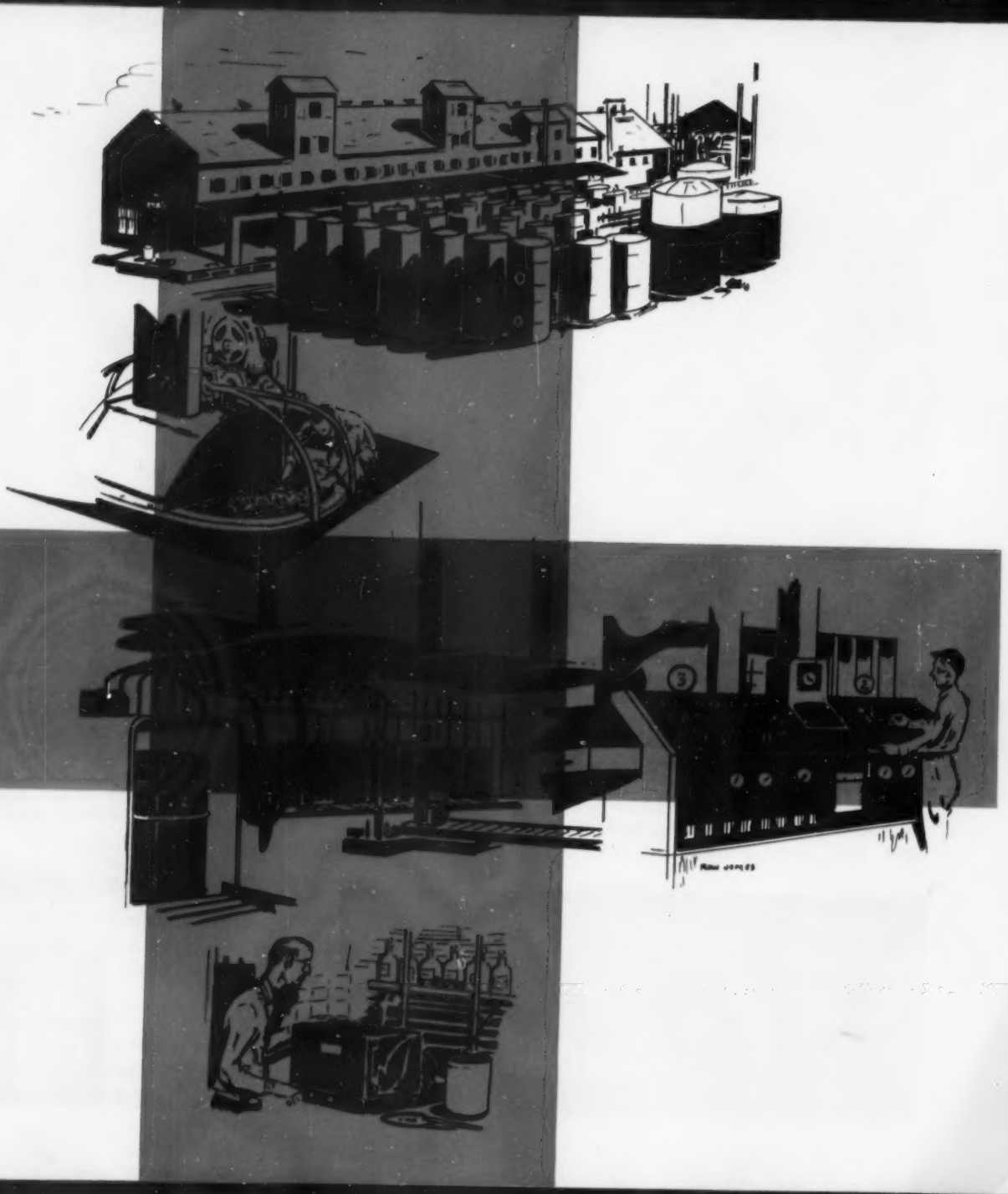
NLGI Spokesman

Journal of National Lubricating Grease Institute



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President's page

by H. L. HEMMINGWAY, President, N L G I

OUR COMMITTEES

The cliches about nothing being accomplished by committees do not apply to the NLGI. Our Institute has grown both in size and in prestige because its committees have a known record of accomplishment.

Only a few of our members appreciate the number of men involved in committee activity, or the vast amount of work that is done each year.

Probably the committee that is more responsible than any other for the world-wide reputation of NLGI is our Technical Committee. Currently, there are 138 members of the Technical Committee, and there are ten Subcommittees with a working membership of about 115 people.

What do they do? They solicit news and papers for this publication. They keep the NLGI classification system up to date. They work with other industries on mutual problems. They define technical terms. They develop recommended practices for the application of lubricants.

Take a look at any technical committee member's files for the last six months or a year. It is a record of an amazing amount of work, information and accomplishment.

Less well known, but equally busy are the ten committees, currently active in the board of directors. Since there are over 40 committee spots but only 18 directors, each director serves on two or more committees. Perhaps the most active of these is the program committee, and, as every chairman has found, this is a sizeable job to carry on as a part time activity. (It's not uncommon to receive copies of a dozen letters in a day to and from program committee members.)

The finance committee helps the treasurer keep the Institute financially sound. Membership writes dozens of letters exploring new membership possibilities. The awards committee does its best to select the industry's "Man of the Year." Others are working on package standardization, nominations, publicity, and the Spokesman.

NLGI is fortunate in having so many loyal, hard working committee people. Without them we'd be just a social club.

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IN THIS ISSUE

ABOUT THE COVER

Keeping grease manufacturing up to date is the subject that concerns the *Spokesman* this month. It's a mighty interesting story of how the Continental Oil Company has kept a lubricating grease plant up to date that was built more than twenty-five years ago.

We asked authors Nelson and Trengove to send us some illustrations of the equipment they use that keeps their plant up to date. The pictures they sent were as interesting as the article and did wonders in making the reader see the plant as it actually is.

We gave both the article and pictures to artist Ronald Jones and asked him if he could give us an artist's concept of it. So—here is his artistic concept of what the authors are talking about.

Keeping Grease Manufacturing

The ideal way to keep grease manufacturing up to date is to design and build a new plant incorporating all those processes and details which make for good operations, both from the standpoint of economics and quality of product. Not many organizations are in that happy position.

In most cases, however, grease manufacturing plants are the result of gradual addition and change and accumulation of equipment so as to take care of their immediate needs in the easiest and cheapest way. Too often this has also resulted in retaining equipment and processes which are no longer economical; and, in many cases, grease manufacturing operations are crude, cumbersome, and obsolete.

Plant—General

The basic structure of our grease plant at Ponca City was built more than 25 years ago. It was designed for the type of grease making and grease processing which was in order at that time. Pressure saponification was just becoming recognized as a valuable adjunct to grease making as was the use of variable speed two-way agitation with positively scraped kettle walls. Automatic filling machines were replacing the older, hand-fill methods, as was automatic casing and sealing of cartons. These improvements were incorporated into the new plant, along with better methods of handling and storage of raw materials, with the view in mind of making it as new and up-to-date as possible.

Because of the ever-increasing demand for more and better quality products in greatly increased quantities within the past ten years, our plant has undergone almost complete revision, with a considerable increase in floor space. While much of the original installation is still in use, most of it has been enlarged and redesigned so as to streamline throughput, enlarge capacity and increase efficiency.

Since our plant is average and typical so far as grease plants, go, and grease manufacturing in general follows

UP-TO-DATE

By E. W. Nelson and Roger Trengrove
Continental Oil Company

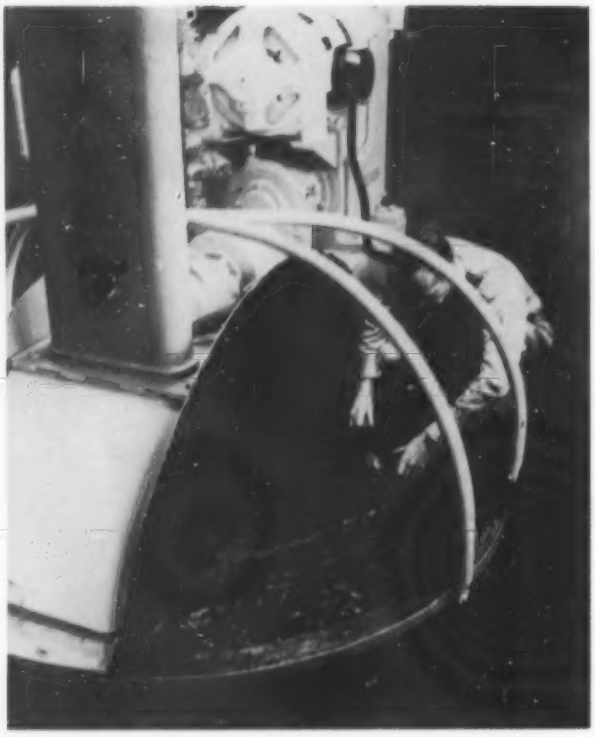
Outside view of grease plant building, including box car loading dock and storage tanks. Trucks are loaded from opposite side of plant. Two large cupolas are for freight elevators which serve four floors.

pretty much the same procedures, no particular attempt will be made to detail either operations or equipment except to give an over-all picture and to point out a few innovations and facilities which have been found valuable.

Essentially, our grease plant consists of a three-story and basement building of brick and concrete with a floor area of approximately 80,000 square feet. All grease making, filling, and packaging is concentrated at one end of the plant utilizing the three floors and basement so as to have a streamlined flow of raw materials to cooking kettles, processing units, filling machines, grease containers, packaging, warehouse or shipping. The remainder of the plant (approximately ¼) is used for warehousing and storage, including laboratory, pilot plant and plant office.

Raw Material Storage and Handling

All raw materials of tank car proportions, including oils, are stored in outside storage tanks. For some materials, such as fats and fatty acids, intermediate inside storage tanks are also provided. These, as well as all lines and valve assemblies, are of aluminum or other noncorrosive composition. All materials from tank storage are pumped, in most cases, through individual lines and pumps, either to scale-mounted weigh tanks or through manifolds and meters directly to the grease kettles. These pumps, electrically driven, are located in a basement pump room. All are controlled by push button from the grease maker's operating desk on the second floor. In order to hold fatty raw materials and oils under the best handling conditions, all storage is maintained at a predetermined temperature. This is accomplished by means of steam-heating coils and tracer lines operating with the condensate under vacuum produced by a jet or on the condensate water. This permits the use of lower temperature steam with attendant lower skin temperatures and eliminates the danger of overheating, particularly of fatty materials, with consequent deterioration. This method of control has been found particularly valuable.



Foreman, Roger Trengove, takes a sample of grease from a kettle. Oblong shaped pipe is vapor duct.

In our earlier installations no general method of raw materials handling was provided. In some cases, fat tanks and mixing tanks were handled on flat-bed trucks and pushed manually from scales to grease kettles. Handling fats and alkalies and raw materials in this manner was not only laborious and time wasting but it was also difficult to maintain any semblance of order and neatness. In the renovation program, this method of handling was replaced by an overhead monorail system, which serves all kettles on both the second and third floors, with an electric hoist for interfloor movement. On this monorail are suspended weigh tanks and hoppers which can be charged from overhead lines where the raw materials are liquid or from bins for the powdered or fluid solid materials. The tanks or hoppers are then easily and quickly moved to any kettle for rapid and cleancut charging.

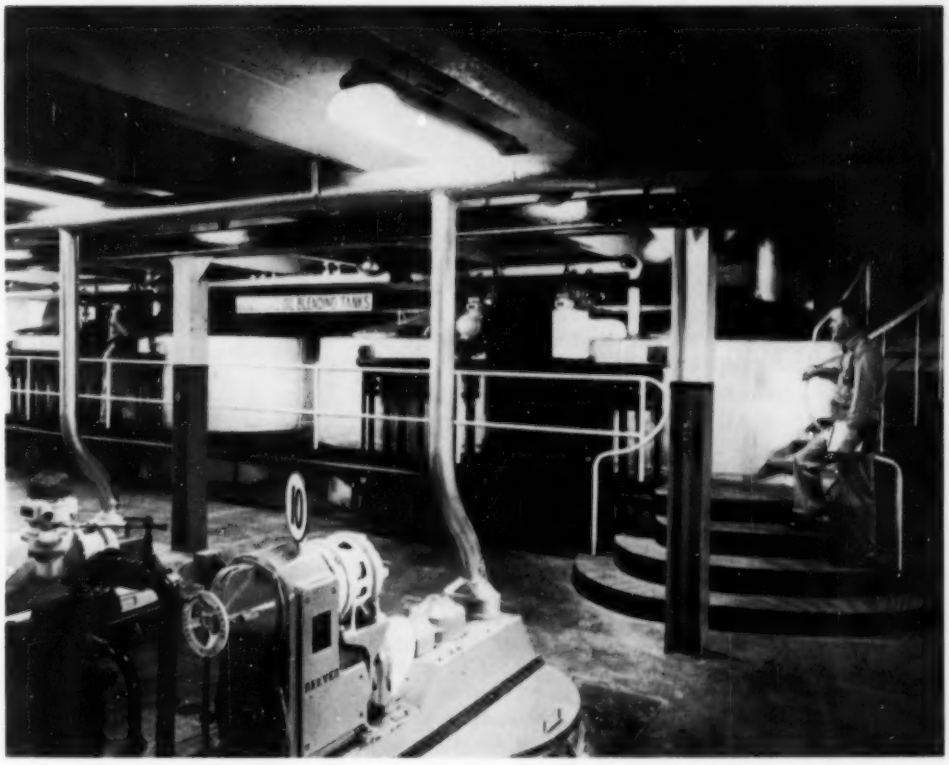
Lime slurries for lime base greases are handled in a similar, scale-mounted weigh tank equipped with an air motor screw propeller for rapid mixing.

Bins with polished, sloping bottoms equipped with vibrators or air-driven augers, which discharge directly into the scale-mounted hopper tanks, are used for many dry materials and a few fluid solids.

Where packaged raw materials are used as charge stocks, these are handled by fork lift trucks.

As a safeguard against those few times when a shipment of hydrated lime is not up to requirements, a screening system is available consisting of a Raymond classifier with attendant conveyors and storage bins. Since it is possible that variations may occur within a single carload, all hydrated lime is put through this system, thus insur-

Four auxiliary kettles, 1,200 pounds to 4,000 pounds capacity, with oil manifold and meter at each kettle, vapor duct, and mono-rail above. Roger Trengove checks a meter. Industrial oil blending tanks are in background.



Pete Carmack mounts the steps to the blending tank platform. Oil is pumped by remote control through lines, manifolds, and meters into tanks. Left foreground shows drive and top of one of the small auxiliary kettles.

ing absolute uniformity of particle size and eliminating any possibility of particles of unburned stone, silica, or other inert materials. This control of hydrated lime has eliminated many batch-to-batch variations previously experienced, reducing necessity of alkali adjustments and reduced screening requirements of finished grease.

Grease-Making Equipment

Grease-making operations begin on the third floor where many of the raw materials are stored or are delivered from outside and intermediate storage, and proceed through pressure saponification, if such is required, to the conventional, paddle-type, finishing kettles on the second floor. These kettles are of various sizes, heated with steam or gas-fired. In the original installation, kettles of 7,000-pound maximum size were used. As the need for larger volumes of grease increased, they were either replaced with larger kettles or enlarged by the addition of a ring or belt on top of the kettle. This approximately doubled their size and increased the capacity of the plant accordingly.

This means of kettle enlargement is feasible for most plants and offers the simplest solution to increased capacity. It requires no additional floor space, with the only requirement that there be sufficient headroom.

Agitation in the first kettles was accomplished by means of variable speed motors driving through a chain with a big ring and pinion gear. This type of drive was bulky, exceedingly noisy, and required considerable maintenance. It was replaced with horizontal, right-angle gear units driven through variable speed reducers. Since capacity of the kettles was more than doubled in some cases, the size of the driving motors was increased accordingly. This type of drive and agitation makes for smoother, quieter operation, with attendant increased mixing efficiency and reduced maintenance.

Covers with thermally controlled latches are used on those high-temperature kettles where any danger of hot spot or flash might occur. Adjustable guard rails cover the open kettles for protection against any possible entrance of accidentally dropped materials or from bodily injury resulting from fall because of optically induced vertigo. Fume ducts exhaust all vapors from the open-cooking kettles through a large manifold, thus making for both pleasanter and cleaner working conditions.

Temperature control of all grease processing is maintained by use of numerous points on the kettles which are either indicated or recorded, or both, at the control panels at the operator's control desk.

Positive displacement rotary pumps with externally adjustable pressure controls are used for all filling and recirculating. These pumps are flanged directly to the kettle outlet valve, a J-type valve; thus giving an absolute minimum of suction line. A mechanically cleaned filter is also flanged directly to the discharge side of the pump; thus, the whole installation including filling lines is suspended from the kettle and leaves the floor under the kettle completely clear and unobstructed. This type of installation has been proven to be very convenient and effective, since it eliminates the need for suction lines, flexible, or otherwise, which can at times cause difficulty with plugging. Discharge lines from the filter are either rigid or flexible, depending upon the type of filling that is to be done. On the previous installation, separate, portable gear pumps with flexible suction lines and separate

filters were employed. This type of equipment was heavy, cumbersome, space consuming and inefficient. The only point in its favor was that one pump could be used for several kettles or several operations.

Filling and Warehousing

All small-sized containers are filled through automatic filling machines followed by mechanical lidding and casing. Other packages of 35 pounds and larger are filled either by an automatically controlled or hand-operated filling line. Lithographed small containers are handled in their original cartons on four-wheel, flat-bed trucks or by fork lift trucks. Larger containers, prestenciled, reach the first floor filling area from the basement storage by means of roller conveyor and electric hoist.

All filled materials, whether cases or drums, are handled on pallets by fork lift trucks and go directly to warehouse or shipping. Except for the movement of empty drums to the filling area, roller conveyors are used only for the momentary handling of filled stocks. All other movement of raw materials and filled stocks is done by fork lift trucks, including warehousing and loading of both trucks and railroad cars.

Laboratory and Pilot Plant

A well-equipped laboratory is located on the second floor of the plant. It functions as a control for all grease-making operations, from raw materials to finished products. This includes all those tests and evaluations which are necessary for the determination of product characteristics. All development work is also handled through this laboratory in connection with the pilot plant. The latter is comprised of small-sized, conventional-type kettles up to 50 gallons in capacity, either steam or electrically heated, with two-way agitation and driven by overhead, variable speed drives. Process studies may be carried out either under pressure or by the open-kettle method. In connection with these kettles, a pilot-size, three-stage Votator is used for continuous or semicontinuous processing of pilot-size batches. The grease can then be further processed by passing through a homogenizer, mill, or colloid mill as desired. Smaller scale equipment of various types is used for initial studies where only sufficient material is required for laboratory evaluations.

In addition to the work done by the plant laboratory, other company laboratories cooperate in special work involving grease development. All long-duration evaluation tests are handled by our Product Use Laboratory. Research projects of a physical nature and small scale and all analytical work are carried out in our Central Research Laboratories, which are equipped with all the tools of modern laboratory investigation.

Housekeeping

There is one phase of plant operation which our organization has taken cognizance of for a great many years and which we believe contributes toward keeping any operation up-to-date. This is good housekeeping. Regardless of what equipment or process is employed, if it is not kept in good operating condition and the adjacent surroundings in a similar state, it is difficult to attain the efficiency and over-all results which every manufacturer strives for.

Order, neatness, and cleanliness are valuable assets in any industry and make for pleasanter working conditions with resultant lower labor turnover, lower accident frequency, increased throughput, better quality production, and increased over-all efficiency.

Bill Dean, greasemaker, at the operator's desk. Push-button switches operate pumps for oils and chemicals with tell-tale lights as indicators. Pressure gauges are on steam. A temperature recorder and an indicator are shown.

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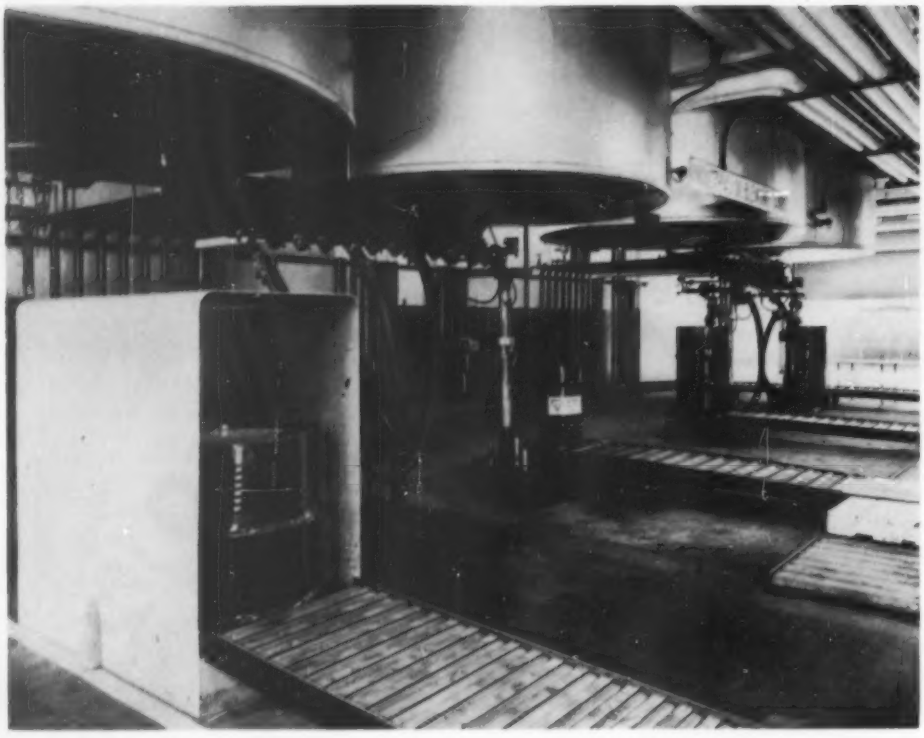

Bottom of the blending tanks with drum hoist (capacity two drums) from basement stencil area in left foreground, and oil filling area and equipment. Beam scales have been replaced with electric-eye dial scales with automatic cutoff.

Our grease plant personnel have recently cooperated in a unit which established a safety record of one million man hours' work without a lost-time accident. Good housekeeping has had much to do with that record.

Multiple-purpose Grease Manufacture

Our latest improvement has been in the manufacture of lithium multi-purpose greases. As with our previous changes, this was an addition-process but with the thought in mind of making it as flexible as possible both with respect to processing variables as well as base composition. In addition, it became a problem of combining this process with that of the regular operations so as not to disrupt the normal production flow and yet be able to increase throughput with essentially the same operating personnel. As is probably the case in most plants, space was at a premium; and location and arrangement were important. Since the same pressure kettle saponification and paddle-type finishing kettles were to be used, the additional equipment was installed in their proximity. Processing is of a semicontinuous nature in that the base soaps may be prepared either by open kettle or under pressure. Charging may be either by meter or by hand, depending upon the type of fat base used. To facilitate alkali handling, the dry material is charged first to the kettles, followed by sufficient water to effect solution. This has eliminated the necessity of presolution with considerable saving in time and handling. After the soap base is complete and the mineral oil incorporated, cooling is accomplished by means of a two unit Votator arranged in series. Cooling to any desired predetermined milling temperature is easily obtained. Grease may be recirculated to any of the kettles in the system, or it can be passed directly to a large volume colloid mill. Since the grease is completely dehydrated in making, no further processing of this nature is necessary. In a closed system, our experience has shown that no deaeration is normally required. For those unusual cases, however, where deaeration is necessary, a deaerator is included in the system through which the grease may be passed. From the mill or deaerator, the grease is pumped to a large surge or prefill tank equipped with slow-speed agitation. Here the grease may be time-processed or filled directly as desired. Except for the semicontinuous preparation of the soap base in adjacent kettles, the process may be carried on almost continuously.

Conclusion

Although our plant has been in operation for more than a quarter of a century, it is still in a relatively modern condition. Changes and improvements have been effected as requirements have demanded with an attempt to keep operations and production capacity as flexible as possible. Grease making and processing equipment are available for the production of all types of lubricating greases.

At the present time, an engineering survey is being made relative to increasing capacity and throughput further. Since economics of operation, rather than raw materials, have become of major importance these studies must take into consideration all phases of grease manufacture. More rapid means of heating and cooling, increased charging and filling rates, and more automatic controls on all operations are changes which will be taken into consideration in any future improvement.

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3. Leather Oils	Emulsifying Agent for Leather Processing Oils	Wetting and Dispersing Agent for Leathers
DISPERSION AND WETTING OF SOLIDS		
4. Rubber Manufacture	Thermo Plasticizing Agent	Increases Dispersibility of Filler
5. Fuel Oil	Keeps Sludge in Suspension	Prevents Segregation of Moisture
6. Printing Ink Manufacture	Aids dispersion of pigment	Reduces Viscosity of Ink
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Patents and Developments

Greases Containing Synthetic Gelling Agents

Greases containing metal salts of acidic copolymers of alpha, beta unsaturated polycarboxylic acids or their anhydrides with low molecular weight compounds having a terminal vinyl group ($-CH=CH_2$) are disclosed in U. S. Patent 2,698,298 issued to Socony-Vacuum Oil Company. The aliphatic compounds used in preparing these copolymers are alpha olefins, $R-CH=CH_2$, and allyl esters, $RCOOCH_2CH=CH_2$, in both of which R is an alkyl group having at least 10 and up to 30 carbon atoms. Coupled with this discovery is the related discovery that when low molecular weight vinyl compounds, such as propylene, styrene, vinyl acetate, etc. are copolymerized with the aforesaid acids or anhydrides, and their copolymers are, in turn, converted to their corresponding metal salts or soaps, the soaps can be used as gelling agents in the preparation of lubricating greases.

Of particular interest for economic reasons as to raw materials, are the alpha olefins, 1-dodecene, 1-hexadenene, 1-octadecene and higher alpha olefins as are obtained by thermal cracking of petroleum wax or waxy stocks. Allyl esters also may be used for the copolymer preparation.

A copolymer for use in this patent may be prepared as follows:

A mixture of about 125 parts by weight of 1-octadecene, about 49 parts by weight of maleic anhydride, about 3.5 parts by weight of benzoyl peroxide and about 265 parts by weight of xylene was gradually heated to about 140° C. The solution was then cooled to about 70° C. and an additional 1.7 parts by weight of benzoyl peroxide were added. Thereafter the solution was heated to about 140° C. and then to about 200° C. at a pressure of about 5 millimeters of mercury to distill xylene and unreacted materials. A yellow resinous copolymer was obtained in about 90 per cent yield. The neutralization number by potentiometric titration was 187.0.

This copolymer then may be employed for the preparation of a barium grease in accordance with the following directions:

About 50 parts by weight of the 1-octadecene-maleic anhydride copolymer, about 300 parts by weight of an acid-treated naphthenic oil having an S.U.V. at 100° F. of 232 seconds and about 29 parts by weight of barium hydroxide ($Ba(OH)_2.8H_20$); (about 10 per cent in excess of the equivalent based upon the neutralization number of the copolymer) were heated to about 360° F. during about 1.5 hours. No gelation occurred. The fluid mass was cooled to about 175° F. and about 10 parts by weight of water added and the mixture reheated. The mass be-

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For Metasap Aluminum Stearates are today's *foremost* development in grease making. Lubricants made with them are moisture-proof, temperature-resistant, water-repellent . . . clear and uniform . . . able to perform superlatively under the tougest conditions.

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came thick and foamed at about 250° F. At about 300° F. the foaming had subsided and a smooth, homogeneous gel was formed which became thicker at about 315° F. No further change was observed upon heating to about 350° F. The resultant grease was cooled to about 150° F. with stirring. Thereafter the grease was cooled to ambient temperatures at which temperatures the grease was quite stiff, showed good mechanical stability and no tendency to bleed.

However, in U. S. Patent 2,698,297, it is pointed out that the aforesaid metal soaps are not too oil-soluble. Oil solubility is improved by reacting these copolymers with long chain alcohols or amines to form half-esters or partial-amides which then are converted into metal soaps. The latter are said to be gelling agents of excellent character, enabling production of greases effective for high temperature use, such as for 250°-350° F. and higher.

A typical example of the preparation of a grease from an alcohol reaction product is as follows:

Ten parts by weight of a styrene-maleic anhydride copolymer (kinematic viscosity of a ten per cent solution in methyl ethyl ketone, 3.53 centistokes at 77° F.) were dissolved in 100 parts by weight of methyl ethyl ketone, and 13.5 parts by weight of n-octadecanol were added. The resulting solution was heated at reflux (about 185° F.) for one hour. The solvent was gradually distilled off and was replaced with xylene, which was added gradually. The temperature of the reaction mixture was finally raised to 280° F. (elapsed time, about one hour), and was kept at 280° F. for one hour. Xylene was then removed by distillation. The resulting resinous product had a neutralization number of 114.0, which indicates that the product is substantially the half ester of the n-octadecanol and the styrene-maleic anhydride copolymer. The partial half ester has a theoretical neutralization number of 120.0.

Four parts by weight of the partial ester were dissolved in twelve parts by weight of an acid-refined naphthenic oil having a viscosity of 232 S.U.S. at 100° F., and ten parts by weight of a solvent-refined naphthenic oil having a viscosity of 514 S.U.S. at 100° F. Three tenths part by weight of Ca $(OH)_2$ was added to the oil and the resulting mixture was stirred and was heated to 320° F. (during one-half hour) and kept at 320° F. for one hour. The resulting gel was cooled and milled to a smooth grease. The grease contained about 15.4 per cent of soap, and had a dropping point of 500° F. plus.

A typical example of the preparation of a grease from an amine reaction product is as follows:

Two parts by weight of a styrene-maleic anhydride copolymer, 3.2 parts by weight of Armeen HT (mixture of 25.0% n-hexadecylamine, 70.0% n- octadecylamine

and 5.0% n-octadecenylamine, marketed by Armour and Company) and 20.0 parts by weight of said acid-refined naphthenic oil, were mixed and heated to 300° F. for two hours to form a partial amide of the copolymer. The solution was cooled to about 200° F. Two parts of water and 1.26 parts of $Ba(OH)_2.8H_20$ were added and the mixture was heated to 450° F. over a two hour period. The resulting grease was stirred while cooling to room temperature and then milled to a smooth, clear grease having a dropping point of 426° F. The soap content was 20.0 per cent.

U. S. Patent 2,698,299, also issued to Socony-Vacuum Oil Company, deals more particularly to greases containing at least one acidic copolymer, at least one fatty acid having at least 16 carbon atoms, at least one aliphatic monocarboxylic acid having less than six carbon atoms, and an amount of at least one alkaline earth metal slightly in excess of that required to convert all of the aforesaid acidic constituents to salts or soaps. By this means, a high dropping point, smooth-textured, stable calcium or barium grease is claimed to be prepared.

The following is an example of the preparation of a 490° F. dropping point grease according to this patent:

An acidic copolymer was prepared by copolymerizing maleic anhydride with the allyl ester of distilled, hydrogenated, fish oil acids (available as Hydrofol Acids 150) containing about 77.6% stearic acid, about 17.7% palmitic acid, about 0.5% myristic acid, about 1% arachidic acid and about 3.2 oleic acid. Benzoyl peroxide was used as the catalyst and the copolymerization carried out in the manner described in U. S. 2,698,298. About fifty parts of the resulting oil-free, acidic copolymer, (having a neutralization number of 208), about 50 parts of stearic acid, about 150 parts of acid-refined, naphthenic oil having a viscosity of 232 S.U.S. @ 100° F. about 350 parts of solvent-refined, naphthenic oil having a viscosity of 513.5 S.U.S. @ 100° F. were heated to 160_2F. in a suitable grease kettle. Ten parts of acetic acid, 24 parts of calcium hydroxide ($Ca(OH)_2$) (4.4 parts excess over theoretical amount required to neutralize acides. Represents about 0.5% free CaO in final grease) and 10 parts of water were added and the mixture was heated. The gel which quickly formed became softer at 185° F. and fairly fluid at 300° F. The mass began to thicken at 330° F. and finally formed a heavy gel at 400° F. After heating for about 0.5 hour, the source of external heat was removed and the grease was stirred while cooling. Sufficient oil was stirred into the grease at room temperature to give a total content of the three components, i.e., salt or salts of acidic copolymer, high molecular weight fatty acid and low molecular weight fatty acid, of 19 weight per cent.

Other Grease Patents

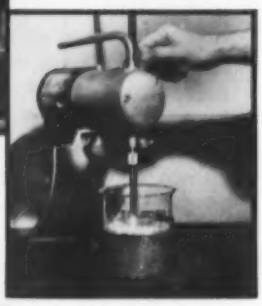
U.S. 2,702,092 (Douglass)—Device for grease packing antifriction bearings.

U.S. 2,704,678 (Lincoln Engineering Co.)—Means for coupling a lubricant line to a lubricant-receiving fitting.

Bentone* 34 Grease

Multi-Tested for a Thousand Uses!

EXACT FORMULATION — various formulas are tested until one is produced that meets all of manufacturer's requirements.

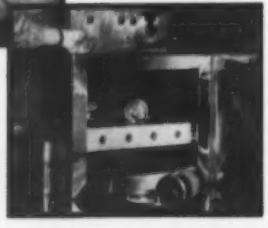


MIXING—mixing prepares formula for milling.

◀ MILLING—milling or homogenizing produces a smooth, consistently uniform grease.

EXACT CONSISTENCY — penetrometer tests indicate consistency or hardness of grease sample and determine the plasticity of the formula.

EXCELLENT MECHANICAL STABILITY — roller tests measure mechanical stability of grease and produce a numerical evaluation — during penetration testing — of the change in consistency caused by kneading or working action of rollers.



HIGH SHEAR STABILITY—shear stability tests exert influence far in excess of any working pressures for which grease will be used.

EVERY DAY Baroid's extensive laboratories assist grease compounders to formulate greases with Bentone* 34 gelling agents. Compounders throughout the country have used Baroid laboratory service to obtain the best formula — using *their* oil and Bentone* 34 — to make a grease that's right for thousands of applications. For the farm . . . automotive industry . . . industrial machinery of every kind — grease made with Bentone* 34 serves a need not met by any other type of lubrication. Its unique composition has a tenacious quality that causes it to adhere to metal . . . has a matchless resistance against rain and washout . . . works well under both *extreme* high and low temperatures! It answers a multitude of lubrication problems because one Bentone grease is good for scores more applications than any known conventional lubricant.

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NLGI Associate and Technical Mem

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Geuder, Paeschke & Frey Company
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Division, United States Steel Company
30 Rockefeller Plaza, New York 20, N. Y.
Representative—Wm. I. Hanrahan

Vulcan Stamping & Mfg. Co.
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Representative—H. B. Scharbach

MANUFACTURERS OF EQUIPMENT FOR APPLICATION OF LUBRICATING GREASES

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Balcrank, Inc.
Disney near Marburg, Cincinnati 9, Ohio
Representative—Richard P. Field

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Lincoln Engineering Company
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Alemite Division
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Montreal, Quebec, Canada
Representative—M. E. Wight

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Mid-Continent Petroleum Corp.
Mid-Continent Bldg., P. O. Box 381, Tulsa, Okla.
Representative—J. W. Basore

Valvoline Oil Company
Division of Ashland Oil & Refining Co. Box G
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Representative—R. B. Wainright

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Cleveland 2, Ohio
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Representative—Frank X. Sieloff

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Foote Mineral Company
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Minneapolis 1, Minnesota
Representative—Abner C. Hopkins, Jr.

A. Gross and Company
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Representative—Eugene W. Adams

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Representative—W. G. McLeod

Harshaw Chemical Company
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Witco Chemical Company
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PEOPLE in the Industry

F. C. LOVE

J. G. CAMPBELL

R. M. CHESNEY

KERR-McGEE ANNOUNCES OFFICERS OF NEW SUBSIDIARY

It was announced here today by D. A. McGee, president, Kerr-McGee Oil Industries, Inc., Oklahoma City, that a wholly-owned subsidiary is being set up by the company to operate all refining, marketing, and pipeline facilities, including those acquired several weeks ago from Deep Rock Oil Corporation.

The subsidiary company will be set up under the name of Deep Rock Oil Company with headquarters in Tulsa. A new name will be selected by the former Deep Rock Oil Corporation from which Kerr-McGee purchased $17,000,000 worth of assets.

President of the subsidiary will be F. C. Love who continues as general vice president of the parent company. Five vice presidents have also been selected by the new company. They are John G. Campbell, Robert M. Chesney, James J. Kelly, William M. Murray, and Jack W. Roach. Kelly will also continue as vice president of the parent company.

The new company will operate two modern Oklahoma refineries. The recently modernized Wynnewood plant processes 15,000 barrels daily and the Cushing unit has an output of 19,000 barrels.

Branded products, other than asphalt, from the two refineries will be marketed under the trade name "Deep Rock." Asphalts will continue under the trade name "Kermac Asphalts". The new company will supply hundreds of service stations and bulk plants in 14 states throughout the middle west. A large volume of unbranded products, including many specialty items, will also be distributed through the new organization.

Kelly will handle the sale of Kermac asphalts and other heavy products as well as unbranded pipeline sales, Murray will be in charge of bulk sales and Campbell will head the distribution of branded products. Roach and Chesney will be in charge of the Wynnewood and Cushing refineries respectively.

President Love joined Kerr-McGee Oil Industries, Inc., as vice president and director, March, 1948. Born at Purcell, Oklahoma, he attended public schools there and received his LLB degree from the University of Oklahoma in 1930. After graduating he practiced law in Oklahoma City from 1930 to 1934 when he became connected with the legal department of Shell Oil Company. In 1941 he became one of the partners of the law firm of Embry, Johnson, Crowe, Tolbert & Shelton, of Oklahoma City.

Mr. Love is a member of the American Bar Association, Oklahoma Bar Association, American Petroleum Institute, Oklahoma City Golf and Country Club, and other civic organizations.

Campbell joined Deep Rock Oil Corporation in 1948 as head of the Supplies and Economics division. His prior industry experience includes seven years with a major oil company in transportation and supplies and economics work. He was promoted to vice president, Marketing, early in 1954 from the position of general sales manager. He is a native of Maryland, and was graduated from

J. J. KELLY

W. M. MURRAY

J. W. ROACH

COMPANY DEEP ROCK OIL . . .

Amherst college in 1930 and did graduate work at New York University. He saw active duty as a Lieutenant in the Naval Reserve in WW II. Campbell is a member of American Petroleum Institute, Western Petroleum Refiners' Association, Independent Petroleum Association of America, and Mid-Continent Oil and Gas Association.

Chesney has been associated with the oil industry since 1934 and has wide experience in refinery management, processing and petroleum chemistry. He received a B.S. degree in chemical engineering from the University of Delaware in 1932 and did graduate work at Temple University. He launched his career in 1934 as a chemist and in 1949 became superintendent of a large 70,000-barrel refinery in New Jersey. He joined Deep Rock in 1951 as manager of its Cushing refinery. He holds membership in American Petroleum Institute, Independent Petroluem Association of America, Western Petroleum Refiners' Association, and American Management Association.

J. J. Kelly attended public schools at El Reno and Junior College at Cameron State Agricultural College, Lawton, Oklahoma. He received his Bachelor of Science degree in Civil Engineering from Oklahoma A & M. In 1938 he joined Allied Materials Corporation, Oklahoma City, and was promoted to the position of engineer and vice president before leaving in 1946 to join Kerr-McGee Oil Industries, Inc. Kelly is vice president, Asphalt Refiners' Association of Oklahoma, a director of The Asphalt Institute, and a member of the American Road Builders' Association as well as other industry associations.

Murray, a member of the Deep Rock organization for more than 25 years, is a native of Ohio and attended Carnegie Institute of Technology. He served as a Lieutenant in the regular Marine Corps in WW I. He is a member of the Union League Club of Chi-

cago, Chicago Oil Men's Club, as well as Tulsa organizations. He is active in industry circles holding membership in American Petroleum Institute's Lubrication Committee since it was formed and is a past chairman. He is a member of the general committee, division of marketing, API; the 25-Year Club of the Petroleum Industry; a director and vice president of the National Lubricating Grease Institute; and a silver card member (25 years) of the Society of Automotive Engineers.

Roach joined Kerr-McGee Oil Industries, Inc., in 1952 as manager of operations, refining division. He was born at Guymon, Oklahoma, and reared in Amarillo, Texas. After graduating with a B. S. degree in mechanical engineering from the University of Texas in 1936, he joined Phillips Petroleum Co. at their Borger, Texas, refinery. In 1945 he became assistant superintendent of their Okmulgee, Oklahoma, refinery and in 1946 joined Stanolind as project engineer of their Garden City synthesis plant. He became division gas superintendent in Fort Worth, Texas, in 1949. Prior to becoming vice president he was manager of the manufacturing department and manager of the research department for Kerr-McGee. He is a member of the American Society of Mechanical Engineers, American Chemical Society, American Petroleum Institute, and independent Petroleum Association of America.

Fourth World Petroleum Congress Delegates From Du Pont

Fourth World Petroleum Congress delegates from the Du Pont Company's Petroleum Chemicals Division are shown studying their itinerary before departing for Rome on June 2. They are left to right J. J. Mikita, director of Du Pont's Petroleum Laboratory; J. R. Sabina, technical manager of the Petroleum Chemicals Division; Walter Mees, manager of export sales for the division. Mr. Mikita presented a paper on the Chemistry of Combustion Chamber Deposits at the Congress, and Mr. Sabina acted as chairman of one of the technical sessions. After the meeting the three men traveled through Europe to talk with people in the petroleum and automotive industries on the latest Du Pont developments in fuel research.

Rome, Italy, June 8

The Du Pont Company's progress studying harmful deposits left by fuels and lubricants when burned in automotive engines was reported here today in a paper presented before the Fourth World Petroleum Congress.

The paper, entitled "The Chemistry of Combustion Chamber Deposits," was presented by J. J. Mikita, director of the Du Pont Company's Petroleum Laboratory, and co-authored by B. M. Sturgis, assistant director of the laboratory.

Mr. Mikita said the Du Pont experiments have revealed that from 40 to 60 per cent of the increase in octane requirements of an engine are due to the insulating and thermal effects of the deposits. It was found that from 10 to 40 per cent of this increase is the result of the physical volume of the deposit increasing compression ratio. A change of timing or location of ignition, brought about by surface ignition or preignition, also increased the antiknock demands of the engine.

Both the fuel and oil contribute to the formation of these combustion chamber deposits and consequently to knock, the Du Pont laboratory director told the group. He said that Du Pont research has shown it is possible to change the characteristics of these materials in the combustion chamber so deposit-harm can be cut down.

Changes in the composition of the newer lubricating oils is one way in which the octane requirement of the engine may be reduced from four to six numbers. At the same time, less preignition is encountered.

Mr. Mikita said that Du Pont research shows tetraethyl lead increases the ignition resistance of those fuels to which it contributes knock resistance. Reducing the high boiling fraction of a fuel is still another way in which it was found preignition tendencies as well as octane requirements could be lowered.

In the processing of high octane number gasolines, there probably are some routes which are better than others in building ignition-resistance into fuels, it was pointed out. Du Pont researchers have found this to be true because tests with gasoline stocks with similar research octane numbers showed these gasolines to have different resistance to deposit-induced ignition.

The speaker concluded that the use of higher quality oils and gasolines has made a definite reduction in deposit-harm. But the ultimate solution to the problem will depend on ways of virtually eliminating the deposits.

Emery Appoints Zilch

The appointment of Dr. Karl T. Zilch to the research staff of Emery Industries, Inc., Cincinnati, Ohio, is announced by Dr. R. G. Kadesch, director of research.

Dr. Zilch will be directly connected with the Fatty Acids and Esters Laboratory, under the direction of V. J. Muckerheide. His background with the Oil and Protein Division of the Northern Utilization Research Branch of the U.S. Department of Agriculture in Peoria, Ill., fits in well with Emery's diversification into special fatty acids and their derivatives.

Dr. Zilch received his Bachelor of Science degree in Chemistry from the University of Missouri. Following three years with the Armed Forces he returned to the same school where he received his Ph.D. in 1949.

He is a member of Sigma Zi, Alpha Chi Omega, the American Chemical Society and the Swiss Chemical Society.

Esso Standard Elects Officers

U. V. Davis, Boston division credit manager of the Esso Standard Oil Company, has been elected president of the Association of Eastern Petroleum Credit Managers. Other officers and a slate of directors were also elected at the Association's 18th annual conference at the Hotel Statler in New York.

Named vice-presidents, and elected to the board, were A. C. Cater, Buffalo division credit manager of Socony Vacuum; L. B. Morgan, Pittsburgh regional credit manager of the Sun Oil Company; E. A. Schramko, Philadelphia division credit manager of Esso Standard Oil Company.

Re-elected as secretary-treasurer was C. M. Mathewson, Boston regional credit manager of Cities Service. Also re-elected—as assistant secretary—was D. R. Meredith, secretary of the Credit Association of western Pennsylvania.

Elected to full terms on the board were I. A. Keller, Boston division credit manager for Shell Oil Company, and W. S. Morris, assistant secretary and assistant treasurer of the California Company, Barber, N.J.

S. G. Steiner, assistant New York division credit manager of Gulf Oil Company, was elected to serve a two year, part of an unexpired, term

Norways Names Binford Head of Trustee Board

Thomas W. Binford has been elected president of the board of trustees for the Norways Foundation.

A 1946 graduate of Princeton University, Binford is president of D-A Lubricant Company. He formerly served as chairman for the foundation finance committee and as a member of its executive and building committee.

Left, H. L. Hemmingway and H. P. Hobart

H. L. Hemmingway and M. R. Bower, right

M. R. Bower and H. P. Hobart Honored by NLGI Board

The date was May 19th and the usual spring board of directors meeting was in full progress. Suddenly President H. L. Hemmingway stopped the routine business and introduced a subject not on the agenda and a complete surprise to two interested observers.

"Gentlemen, we will pause a few moments to honor two retired board members." He was referring to past directors M. R. Bower and H. P. Hobart who had recently retired from active service with their companies and resigned from the NLGI board. After so many years of faithful attendance at all meetings, getting accustomed to their absence was something that required gradual realization. So, both were present as guests. M. R. Bower had continuously served this industry as a board member since 1935, H. P. Hobart since 1943.

In a short message packed with praise for their loyal service to this industry, President Hemmingway briefly sketched some of the many contributions each had made toward building a small organization into its present strength. Then he presented each with a silver tray with the signatures of seventeen board members and officers engraved on them. In the center was their name and the inscription: "In Appreciation of Outstanding Service as a Director of NLGI, May 19, 1955."

Both recipients are men of action rather than words and what they had to say didn't take long and meant plenty. Each sounded as though he was a new board member. Both looked confidently to the future. There wasn't one glance at the past. When they had finished their short acceptance speeches everyone felt as though he had personally been given a sketch of the industry's future and the role NLGI and each member was to play in it.

Most remembered thought was: "remember, that as directors you are here to represent all the members—that is your primary purpose as a director." When they had both finished you were left wondering why such vigorous thinking into the future had reached such an early retirement. It has only been in the last few years they have seen an NLGI emerge as they had planned and built it through the years.

Technical Committee

Chairman T. G. Roehner, Director of the Technical Service Department, Socony-Vacuum Laboratories

Organization of the Symposium on Flow Properties of Lubricating Greases and the Panel Discussion on Lubricating Greases for Modern Farm is progressing rapidly. The memberships of the current committees are:

Symposium on Flow Properties of Lubricating Greases

N. Marusov, *Chairman,* Gulf Research & Development Company
L. C. Brunstrum, Standard Oil Company (Indiana)
E. S. Carmichael, Socony Mobil Oil Company, Inc.
E. W. Cave, Continental Oil Company

Panel Discussion on Lubricating Greases for Modern Farm Machinery

M. L. Carter, *Chairman,* Southwest Grease & Oil Co., Inc.
C. J. Boner, Battenfeld Grease & Oil Corporation
E. W. Cave, Continental Oil Company
T. E. DeVilliers, Cities Service Research & Development Co.
R. P. Lee, Consumers Cooperative Association

Both committees have held one or more meetings but there still is time for any member of the Technical Committee to send to the above Chairmen suggestions regarding details of organization.

Industry NEWS

U. S. Steel's Fairless Stresses Need for Aid to Schools

American business, in meeting the requirements of an expanding economy, is placing an unprecedented demand upon colleges and universities for trained personnel and it is up to private enterprise to provide heavier financial support if educational needs are to be met, Benjamin F. Fairless, former chairman of the board, U. S. Steel Corporation, declared here tonight.

Speaking before a joint meeting of the Lynchburg Chamber of Commerce and the Central Virginia Industries, Mr. Fairless observed that the structure of American business has changed since the days when a successful concern merely had to make a good product and sell it at a profit. The age of automation has made it necessary to increase vastly the number of technically-trained graduates. In addition, the growing emphasis on human relations in industry has created a greater demand for those schooled in the social sciences and in the humanities taught in the liberal arts colleges. The joint meeting, held at Sweet Briar College, honored the Virginia Foundation for Independent Colleges.

Mr. Fairless also warned that unless private interests—both individuals and business concerns—provide greater financial support to the colleges and universities the U. S. educational system threatens to fall into the "intolerable dangers" of government monopoly.

"I do not see how any businessman who has witnessed the rise of Fascism, Nazi-ism and Communism abroad—and who has watched power-drunk dictators pervert their government-controlled school systems to the teaching of these poisonous philosophies—can fail to perceive the intolerable dangers involved in permitting our American institutions of higher learning to be all bundled up into one convenient package, and placed in the hands of any single agency or group, political or economic," Mr. Fairless said.

From a dollars-and-cents point of view, Mr. Fairless observed the country has but two choices in solving the economic plight of our colleges and universities: "We can contribute voluntarily to the support of these institutions; or we can let the government take over and tax us accordingly. And the latter course, I suspect, would prove to be, by far, the most expensive in the end."

Mr. Fairless pointed out that nearly two-thirds of America's privately-endowed colleges and universities are running into the red. The combined operating deficit, he said, amounts to several hundred million dollars a year and that pent-up capital needs for new plant and facilities may soon reach about $6 billion more.

Competing as they must with tax-supported schools, privately endowed institutions cannot solve their problems by increasing tuition charges to the necessary levels or by curtailing the scope and quality of the educational services offered, Mr. Fairless observed.

Stressing that voluntary contribution schools had not been able to secure adequate support from their alumni or other public-spirited individuals, Mr. Fairless said: "Their only remaining recourse is to business institutions. In short, it appears their survival will depend in large measure upon whether American corporate enterprise is ready, willing and able to come to the financial rescue of our American system of private education."

Mr. Fairless said a recent survey indicates that American business this year will give about $100 million in aid to education. "Now that is a highly encouraging start . . . but clearly it is not enough to do the job."

The need for maintaining and strengthening our educational system is based on three significant facts Mr. Fairless pointed out:

1. That nowhere else in the world do the people possess as much freedom as here in America; 2. that no other nation is as productive as ours, and, 3. that no other country has as many colleges and universities as America. The proportion of college students in this country is five to ten times that of leading European nations.

"Now these three facts," Mr. Fairless said, "are by no means unrelated. It didn't just happen that way. It is clearly a matter of cause and effect; for no one of these facts would be a fact, were it not for the other two."

Labline's New Penetrometer

LABLINE'S new PENETROMETER, Cat. #4100S, features new and improved depth range, now permitting penetration up to 62 mm. Ideally suited for use with the new proposed A.S.T.M. Universal Magnesium Penetration Cone, Standard Oil of Indiana model, for all greases including those in the semi fluid range. New cone was first presented at the A.S.T.M. D-2 February meeting in Houston, Texas, Committee G on Greases.

Penetrometer features single knob adjustment, double guide posts, all aluminum castings, and many other exclusive features.

A companion Penetrometer, with built-in 5-second timer, the Labline-SETA is also available.

Write for Bulletin 4100S and LS 1719.

Fisons, Ltd., and Rahn To Represent Foote

Two major chemical firms have been appointed to represent Foote Mineral Company's lithium chemical interests in Europe and the United Kingdom. L. G. Bliss, Vice President-Sales, Foote Mineral Company, announces the appointment of Fisons, Ltd., and Hans Rahn and Company.

Fisons, Ltd., one of England's foremost chemical companies, will represent Foote in the United Kingdom.

Hans Rahn and Company of Zurich, Switzerland, will represent Foote in continental Europe. Hans Rahn is a well known chemical distributing firm.

Comstock Discusses Market Research

The tremendous range of possible contributions by market research to management marketing decisions were described by A. Eugene Comstock, supervisor of marketing research, Standard Oil Company (Indiana) at the midyear meeting of the American Petroleum Institute Division of Marketing.

"Market research has contributed to management decisions ranging from copy themes for institutional advertising and identification of agents and dealers as main channels of communication between the company and the public to color and marking of barrels, accounting and auditing procedures, format and content of company publications, station maintenance, rental policy and sales programming," said Comstock.

Comstock placed market research studies in two major categories: 1. Repetitive studies which provide a continuing flow of recurrent measurement of key factors; and 2. Unique studies conducted to meet a specific need at a specific time. He offered two suggestions for improving the use of studies in market planning. The first was to better acquaint management with the ways in which market research can provide information of help in almost any marketing decision. The second was a recommendation for better post study communications between management and the searchers after a study had been completed to provide the researchers with more complete knowledge as to how

and why research findings were used —or not used.

The Marketing Research Committee, with R. H. Collacott of Standard Oil Company (Ohio) as acting chairman, took under consideration a recommendation for a survey on relations between commission agents and their suppliers. The recommendation came from the Commission Wholesale Marketers Advisory Committee under the chairmanship of Frank A. Watts of Humble Oil and Refining Company. Survey findings would be tabulated so as to reveal a summary of all agents' opinions and also to reveal to companies the opinions of their own agents. Respondents to our questionnaire will remain anonymous.

A study of service station dealer-maintained service records will reveal the boundaries of the dealer's "primary trading area," according to William S. Penn, Jr., of the Union Oil Company of California. Penn identified the primary trading area as that area from which comes 90 per cent of a dealer's service business and more than 50 per cent of his gasoline business. According to Penn, the value of such a study lies in the identification of that area in which direct mail and personal solicitation would be most productive.

J. D. Orton of Humble, John H. Picou of Atlantic Refining Company and R. H. Collacott described three methods for determining justification of capital expenditure: 1. rate of return, 2. speed of payout and 3. index of comparability. N. L. Turkevich of Continental Oil Company delivered a critical appraisal of touring services.

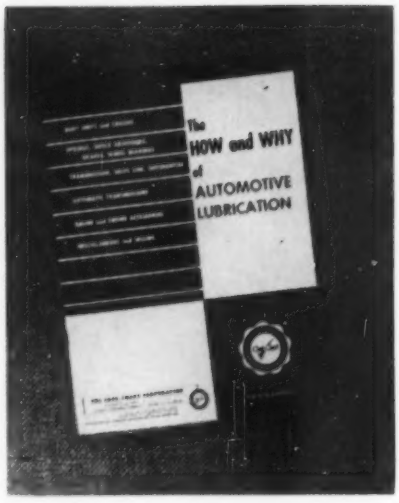
Check-Chart Corp. Distributes "How & Why"

The Chek-Chart Corporation, Chicago, now is distributing the answers to *how* all automotive lubrication services are performed and *why* they are needed. That information and more is contained in a 52-page manual, The How and Why of Automotive Lubrication, completely revised so that 1955 automotive servicing techniques are available when they are needed—in 1955.

For training new personnel, The How and Why of Automotive Lubrication is a complete course of instruction in six sections. For refreshing experienced help it is a reference book. For showing customers how and why their cars need to be serviced, it is a sales tool which will be found to be invaluable.

Although the manual has many new and improved features, it is far from untried. Its three previous editions have been used in thousands of automotive service establishments all over the country. Changes and additions to the contents are based upon the experiences of former users, plus changes in automobile design and equipment.

The How and Why of Automotive Lubrication is not a textbook in the traditional sense. It is written and illustrated to fit closely with the daily work of all service stationmen. It tells in clear, concise language and shows with fine line drawings what they must know in these six lines of service: Body Units and Chassis; Springs, Shock Absorbers, Wheel Bearings, Brakes; Transmission; Drive Line; Differential; Automatic Transmissions;



Engine and Engine Accessories; Miscellaneous and Selling.

A table of contents precedes each of the six sections so that reference is quick and easy. The attractive red, white and blue manual has a heavy, high gloss cover. It is sturdily bound to withstand hard usage.

For training and re-training, for building good will and for selling more service, The How and Why of Automotive Lubrication is a "must" for today's service stations.

Additional information, including single copy and quantity prices is available from The Chek-Chart Corporation, 33 East Congress Parkway, Chicago 5, Illinois.

Socony Mobil Oil Co. Moves to Garden City, L. I.

The Retail Training Laboratory of Socony Mobil Oil Company, Inc., has moved into new quarters in Garden City, Long Island, New York. For eight years before that it was located at 110th St. and Eighth Ave. in Manhattan.

To the Laboratory come Company and affiliated-company executives from around the world for training in the most recent retailing developments. Most of these men are training instructors. Their study at Garden City is but the beginning of a chain reaction for there is a network of training schools. The executives take back with them their newly acquired knowledge to pass on to others in some 75 schools and testing stations throughout the free world. All are

modeled on the Garden City Laboratory.

"Students" in the field are salesmen who, in turn, funnel these latest techniques to the many thousands of Mobilgas stations operating in busy metropolitan areas or in remote spots.

Those who come for instruction at Garden City, or "Mobil" University as it is known to some in the Company, average about 10 years of service station operation and supervision experience. They receive a basic training of two and a half months and return annually for development courses.

The Laboratory also has the responsibility of training the sales management and field management organizations on service station development.

Since the founding of the school in 1946, about 400 men from the United States and approximately 500 from 54 foreign countries have been trained.

This, then, is the world center for the improvement of Mobilgas stations.

While much of the work by those in training will be done in the modern, air-conditioned classrooms on the second floor of the two-story building, there also is learning by doing. This means getting out of business suits and into the familiar Company service station jacket and trousers. Then it is out on the drive or under a car in the lubritoriums where they will assist the permanent staff which mans the station open to the public.

Frequently "students" not assigned to actual work in the station will watch driveway activity, much as medical students view operating-room technique, from the balcony which fronts the classrooms.

Extensive use will be made of visual aids in class work. Standard equipment includes projectors, loop film techniques, book-type blackboards, cutaway engines, an automatic transmission and the Socony Mobil-developed engine analyzer.

The analyzer is an electronic instrument for quick and accurate diagnosis of automotive engine ills. Weighing less than 60 pounds, it looks much like a television set. It "televises" engine performance through a cathode-ray tube on an oscilloscope screen. In all, picture patterns depicting about 65 different engine ailments have been observed and identified by Socony Mobil engineers.

Major activities of the center are to train, to develop techniques and procedures for servicing cars, and to test equipment and tools to care for the modern car before recommending them to dealers. It often has happened that modifications and improvements have been suggested to equipment manufacturers. With the introduction of the automatic transmissions, it was necessary to develop a new tool to facilitate working on them. The design then was turned over to a manufacturer for production.

The ground floor of the building houses the International Mobil-gas Station. It is equipped to give the community service that will be a standard for Mobilgas stations throughout the world. In the lubritorium are 14 overhead reels representing the major equipment manufacturers. The pumping of gasoline is done by pumping units at the tanks by the building instead of at the service island. These units are under plastic cover so their operation is visible to the public.

Some of the other modern items are power-operated can crushers for motor oil cans, saddle type jacks, impact tools for tire mounting, tire changing equipment for tubeless tires, fast battery chargers for 6 and 12 volts, headlight adjusting and wheel balancing machines and an automatic car washing-shampooing installation.

The driveway and approaches were designed to make it as easy as possible for customers to drive in and out. Lighting is adjusted so the luminaires provide sufficient working light without shining into the eyes of passing drivers.

And, to promote better working conditions, shower and locker facilities are provided for employees.

But, as C. C. Garofalo, Socony Mobil retail sales development division manager and father of "Mobil" University, puts it: " The most important feature of the International Mobilgas Station portion of the Retail Training Laboratory is the station crew. The heart of a service station is service, and this depends more on the manpower than on the physical facilities. To insure this, the permanent staff of the station was selected only after

considering Company men over the nation."

The managership of the station went to William F. Nutting, formerly with the Socony Mobil Training Station in Hartford, Conn. The assistant manager is Arthur Langlais, Plainedge, N. Y.

To insure the effectiveness of the over-all program, Mr. Garofalo has familiarized himself with service station operation through global field trips. As a result, he brings to the classes an understanding of the customs and practices of the free-world countries where Mobilgas stations operate.

W. F. Briggs Discusses Modern Fuel

Fuel oil marketers soundly whipped the coal industry by advertising oil as a "modern fuel," fully automatic, clean, convenient, etc. These same oil men are now finding their own claims used against them by a more recent competitor: natural gas. This problem was explored today by William F. Briggs, president of the Valley Oil Company, Middletown, Conn., who was one of five panel speakers on fuel oil at the American Petroleum Institute's Division of Marketing midyear meeting.

"Some are just beginning to wonder," he said, "if they are now in the same position in which coal found itself in the twenties as the monster 'modern automatic fuel' loomed up on the horizon."

According to Briggs, fuel oil marketers must beat their competition on these same grounds. "We will need to make oil heating as good as the customer thinks heating should be. Home owners want fully automatic heating. They don't care whether it's gas or oil. They want prompt, courteous, friendly, clean service and service without cost if they can get it. They want it on a "breakfast in bed" basis.

Giving them that kind of service is the problem that faces fuel oil marketers he said, and added that our record of considerate treatment of customers hasn't been too good in the past. He pointed to use of dirty oil trucks and oil burner service trucks, non-uniformed or semi-uniformed drivers, poorly trained service men, carelessly installed equipment, etc. He concluded by saying, "We need help; we need a new frame of mind; we need a new 'look.'"

A second speaker, D. L. Barrett, Esso Standard Oil Company, New York, N. Y., reported the results of surveys his firm has made to improve fuel oil delivery methods. According to his findings the most effective delivery program would include the degree-day system for automatic deliveries, printed meter delivery tickets, full tank signal device for inside tanks, budget payment plans, clean and attractive trucks and competent and courteous personnel.

An argument for installment payments for fuel oil users was advanced by Francis J. Schuster, Troy Oil Company, Indianapolis. He compared the use by fuel oil marketers of modern record keeping equipment and methods, office equipment, and the improved quality of the product itself with old fashioned C.O.D. credit methods. Budget payment of fuel oil, he said, gives the customer a sense of security because by prepayment he

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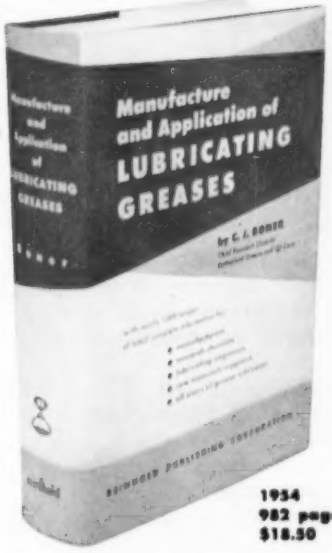
by C. J. Boner

Chief Research Chemist
Battenfeld Grease and Oil Corp.



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The book begins by describing in detail the structure and theory of lubricating greases. Then follow chapters on the various raw materials, processes and manufacturing equipment. Lubricants containing specific thickeners, including such recent developments as lithium soaps, complex soaps and non-soap gelling agents, receive special attention.

Of major interest is the large section on present uses and future trends of lubricating grease products. Here you'll find the complete details of when, where, and how to apply a specific lubricant for any given purpose.

Everyone concerned with the preparation or use of grease lubricants will find Boner's book of enormous practical value. Manufacturers and lubricating engineers will find here a complete breakdown of the effects of each ingredient or treatment upon the characteristics of the final product, and a full explanation of the physical and chemical methods used in measuring these characteristics. Suppliers of fats, oils, additives, thickeners and other raw materials will gain new ideas for future product research and development. In addition, users of grease products will learn the properties of available lubricants and the major purposes that each fulfills.

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has assured himself of a good part of next winter's heat, regardless of what may happen.

Robert Gray, editor, *Fuel Oil and Oil Heat Magazine*, discussed "Oil-heating Market Reports" and J. A. Collins, Frontier Refining, Buffalo, N. Y., reported on "Burner Service Responsibility."

Presiding as chairman of the Fuel Oil Committee was M. N. Vining, general manager of the Diesel Oil Sales Co., Seattle, Washington.

DuPont Price Reduction

A reduction in the price of Du Pont tetraethyl lead antiknock compounds was announced recently by David H. Conklin, director of sales of the Petroleum Chemicals Division. This is the second Du Pont price reduction within the past six months and the fourth in the past 15 months.

With May 27 shipments the domestic price (including Canada and Mexico) of Du Pont Tetraethyl Lead Compound Motor Mix is 36.08 cents per pound compared to the former price of 36.70 cents per pound. The price for Aviation Mix Compound is reduced to 39.66 cents per pound from the former price of 40.28 cents per pound.

Put in terms of straight TEL content, the new price is approximately 58.69 cents per pound in motor mix compounds and about 64.59 cents per pound in aviation mix compounds.

API Announces Motion Picture

"Barrel Number One," an exciting educational motion picture about oil's manifold operations and the people who participate as links in its great chain of service, is the American Petroleum Institute's 1955 motion picture.

Sequel to other outstanding productions as "The Story of Colonel Drake" and "American Frontier," the new motion picture was previewed tonight by members of the Oil Industry Information Committee at their regular meeting here in Pittsburgh.

Executive Director H. B. Miller, in announcing details of the motion picture, reported that it will be released for public showings in October, at the beginning of Oil Progress Week.

Sales prints, for company showings, will be available sometime in August, he added. Use of these prints, however, will be restricted to company use until Oil Progress Week.

"Barrel Number One" dramatizes the endless search for oil—the headaches, hazards and difficulties that precede production of the toughest barrel of oil—the first barrel of oil from a new well.

In sequence fashion, the motion picture then follows the barrel through pipe lines to the refinery, where it is processed into usable products. From there, it moves on to distribution centers, where it is marketed and consumed.

The story line is told by the various people who work in oil—the geologists and explorers, the drillers and producers, refiners, transporters and marketers. Emphasis is placed on the many talents, trades and types of people required in the mammoth job of keeping this nation supplied with petroleum products.

"Barrel Number One" was photographed "on location" in various sections of the country. Beautifully executed, it contains many unusual scenes of oil installations. The story line is woven through in such a fashion that it gives a broad concept of the many aspects of oil. It is 29 minutes in length, and is in black and white.

Like other API motion pictures, "Barrel Number One" will be suitable for general audiences of all age groups. It will be particularly valuable also to schools, for educational purposes, and to oil companies, for training programs.

Miller said that prints will be available later this summer at $60.00 for 16 millimeter, and $125.00 for 35 millimeters. He expressed hope that every oil company in the country would take at least one print, and use it advantageously not only during Oil Progress Week but for a prolonged period thereafter.

Previous motion pictures produced by the Institute—many of which have won national and international citations—include "The Story of Colonel Drake," "American Frontier," "24 Hours of Progress," "Man on the Land," and "Crossroads, U.S.A."

Shell Oil to Aid Education

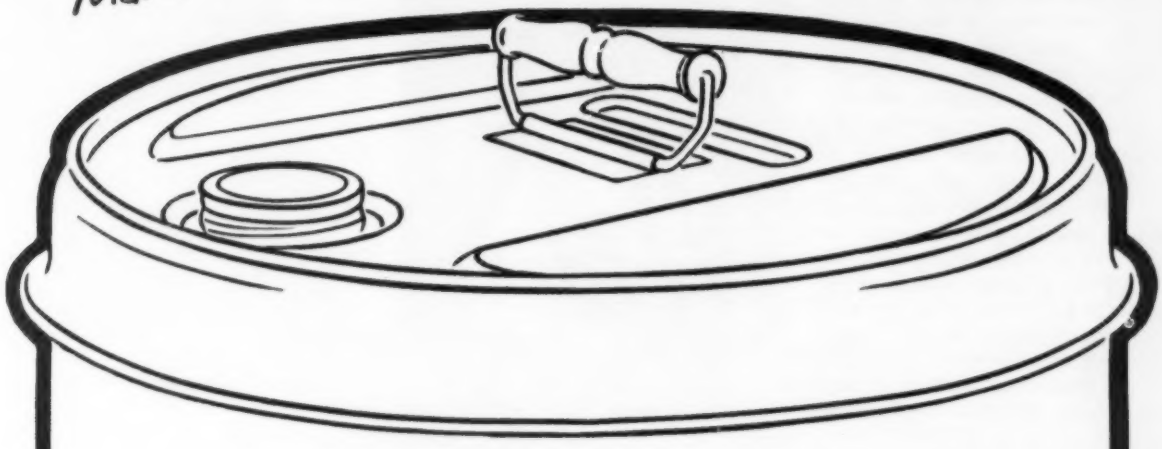
Direct aid to U. S. higher education of $350,000 will be provided in 1955 by the Shell Companies Foundation, Inc., it was announced today by M. E. Spaght, executive vice president of Shell Oil Company and president of the Foundation.

The amount, one of the largest in industry, has been allocated by the Foundation which administers gifts made to it by Shell Companies. The money will be used for the education of scientists and the development of research at 41 different colleges and universities through the academic year 1955-56.

Mr. Spaght said that, since the inception of the program in 1947, Shell has sponsored 407 fellowships and 89 research grants with a total value of $1,500,000, and that the 1955 allocation was the largest ever provided for support of higher education.

The fund for higher education provides 49 fellowships and 20 research grants in designated fields of scientific and allied study. Schools are given full responsibility and latitude for selecting the fellows and for utilizing the funds provided for basis research. Fields designated by the Shell Companies Foundation for 1955-56 support include business administration,

Make friends with Continental's steel containers



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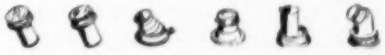

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chemistry, chemical engineering, engineering mechanics, geology, geological and petroleum production engineering, geophysics, mathematics, mechanical engineering, metallurgy-corrosion, physics, and plant science.

The research grants total $150,000. This is the largest single item in the Foundation's educational program. Each grant consists of a donation of $5,000 to the designated school department to assist in expanding fundamental research and a supplemental donation of $2,500 for use in any manner the school determines. Mr. Spaght pointed out that this extra grant need not be expended on research if more pressing needs exist elsewhere in the school.

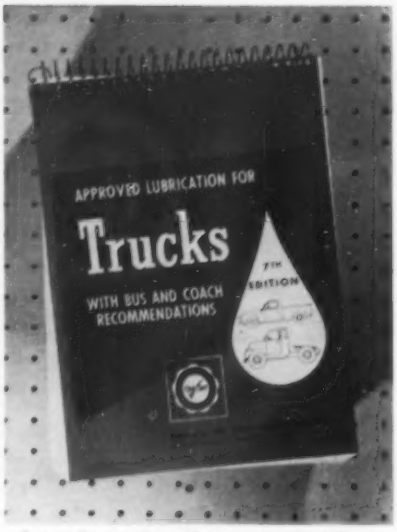
The fellowship grants total $125,000 to assist in the postgraduating training of 49 outstanding students. Each fellow will receive $1,500 for his personal maintenance. His tuition and fees are also paid and an additional fund is supplied the designated department as a cost of education supplement. Schools not supported by taxes will receive a further supplemental grant for general administrative use.

Mr. Spaght emphasized that neither the recipients of Shell fellowships nor the Shell companies are obligated as to future employment. There are also no restrictions within designated fields on projects undertaken by schools receiving research grants, and the institutions are free to publish research results.

Complete Truck Lube Information Ready

The seventh edition Approved Lubrication Guide covering the latest 1955 model trucks, with Bus and Motor Coach Recommendations, has just been published by The Chek-Chart Corporation, Chicago.

Rated as the most complete truck lubrication information available, it has an 80-page coverage of all popular light and light-medium truck models in diagramatic chart form and of specially assembled heavy-duty trucks in tabular chart form. With 4 pages of Bus and Motor Coach gear lubricant and motor oil tabular data, there are in addition 10 pages of Service Instructions which give detailed step-by-step procedures for servicing all points on individual charts. *Of special interest* a part of this latter section for 1955 has been given over to a full presentation



of truck-employed Automatic Transmissions. Rounding out the volume to its full value, there are 10 special axle unit charts (including the Timken Tandem drive rear axle series SFD, SLD and SQD and the Marmon-Herrington all wheel drive) plus a cab lubrication chart.

With truck population having doubled in the past few years, it is more essential than ever for every service station operator and oil company salesman with truck, bus and motor coach business to have the best lubrication service information available. This seventh edition Truck Lubrication Guide is their book.

Additional information and prices may be secured from The Chek-Chart Corporation, 33 East Congress Parkway, Chicago 5, Illinois.

High Schools to Study Service Station Selling

Some of the nation's high schools may be offering a course in service station selling this fall, it was revealed here today at the midyear meeting of the American Petroleum Institute's Division of Marketing.

The make-up of such a course was outlined at a meeting of the API's Marketing Training Council. Five manuals are to be prepared with the following titles: "The Modern Service Station," "Products Sold in Service Stations," "Sales and Service in the Driveway," "Other Services Rendered in Service Stations," and "Housekeeping and Maintenance."

The project has been developed jointly by the committee and University of Texas officials. Mrs. Pauline Burbrink, of the University, who attended today's meeting, is the coordinator of the project.

According to Mr. E. J. Langham, manager of merchandising, Sun Oil Co., Philadelphia, a number of high schools have asked for the course in service station selling. It is felt that some schools will incorporate it into their curriculum this fall.

A description of vocational opportunities in the petroleum industry will be included in the course. Fields to be covered are: production, refining, marketing, transportation and research. There are 4,000 separate occupations in the oil industry that are to be covered. Job descriptions will be included, along with entry jobs and promotional possibilities.

It is expected that the course in service station selling will help the industry to attract high-caliber personnel, in the opinion of Langham, Chairman of the Marketing Training Council.

"The oil industry offers stability of employment, and average wages that compare with any industry," Langham said. "A course in service station selling should certainly make this clear to high school students."

General Mills and Crosby Market New Line

The Chemical Division of General Mills, Inc., and Crosby Chemicals, Inc., announce an arrangement whereby General Mills will market the major portion of a complete line of tall oil fatty acids to be produced by Crosby Chemicals, under General Mills' Aliphat brand. General Mills' Chemical Division will continue to manufacture at Kankakee, Illinois, tallow, soya, cottonseed, coconut, corn and other vegetable fatty acids.

Crosby started producing tall oil fatty acids at their plant at Picayune, Mississippi, about April 15th. Their new, modern, up-to-date installation, with large capacity, is especially designed for tall oil fractionation and distillation of fatty acids with extremely low rosin acids content.

The Chemical Division of General Mills will handle the distribution of the complete line of fatty acids, as well as fatty acid derivatives and Polyamide Resin through its District Sales Offices and Sales Representatives. General Mills will carry warehouse stocks throughout the country.

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The improved high quality and excellent performance characteristics of Hyfacs 442 12-Hydroxystearic Acid and 2142 Hydrogenated Castor Oil is maintained at uniform peaks by strict quality control. The combined efforts of research, development and control assure highest uniform quality—every time you order from Emery!

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Details of sales and service are given careful attention by Emery's 19 direct sales representatives located throughout the United States. Branch offices and additional warehouse points, coast to coast, are your assurance of quick service and fast shipments. Also, savings can be realized by combining less than carload lots of 12-hydroxystearic acid or hydrogenated castor oil with your other requirements of animal, vegetable or hydrogenated fatty acids, stearic and oleic acids.

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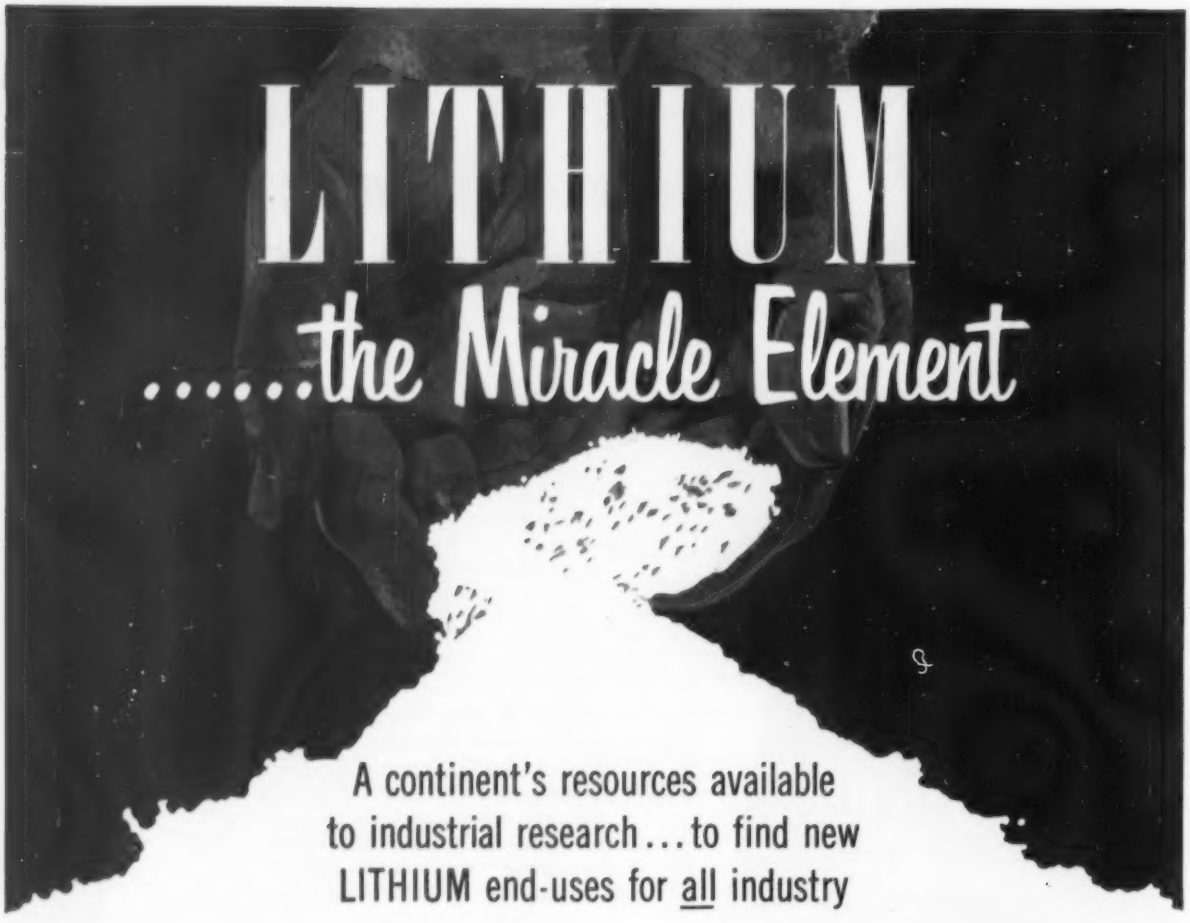
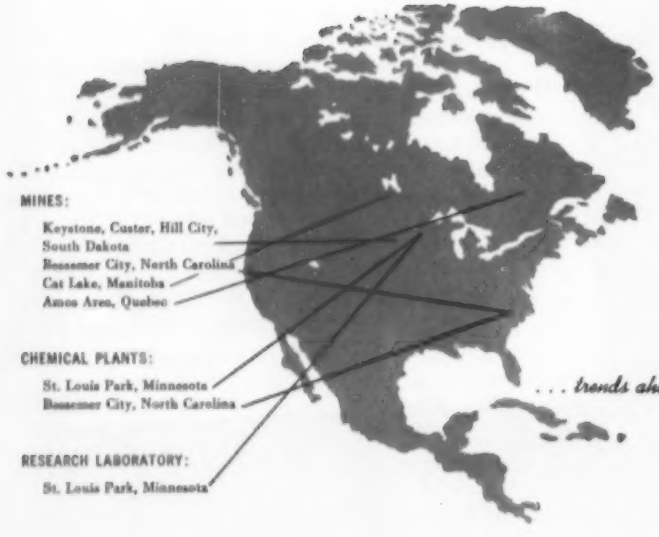


A continent's resources available to industrial research... to find new LITHIUM end-uses for all industry



Take a look at Lithium, if you have a production interest in ceramics, multi-purpose greases, air conditioning, brazing fluxes, pharmaceuticals, organic chemicals or metallurgy. If your industry is *not* one of those mentioned above—why don't *you* take a long look at Lithium too? Lithium's unusual, sometimes paradoxical, often uniquely valuable properties have achieved over-all savings—through shortcuts, reduction of waste, improvement of end product and simplification of operating procedures—in industry after industry. Investigate how Lithium may fit into *your* production picture. Its possibilities are unlimited. Write for Data Sheets.

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FUTURE MEETINGS of the Industry

JULY, 1955

19-21 American Petroleum Institute (Committee on Agriculture annual business meeting and field trip), Oregon State College, Corvallis, Ore.

AUGUST, 1955

15 American Petroleum Institute (OIIC Steering Committee meeting), Biltmore Hotel, N. Y., N. Y.

15-17 Society of Automotive Engineers (West Coast meeting), Hotel Multnomah, Portland, Ore.

15-19 American Institute of Electrical Engineers (Pacific general meeting), Butte, Mont.

21-26 National Congress of Petroleum Retailers, Inc. (9th Annual Session), Sheraton-Cadillac Hotel, Detroit, Mich.

30-31 Petroleum Packaging Committee of the Packaging Institute, Royal York and King Edward Hotels, Toronto, Canada

SEPTEMBER, 1955

2-3 Association of Desk and Derrick Clubs of North America, The Commodore Hotel, N. Y.

8-9 American Petroleum Institute (OIIC meeting), Conrad Hilton Hotel, Chicago, Ill.

12-15 Society of Automotive Engineers (tractor meeting), Hotel Schroeder, Milwaukee, Wis.

13-15 National Petroleum Association, Atlantic City, N. J.

14-16 National Petroleum Association (53rd annual meeting), Traymore Hotel, Atlantic City, N. J.

22-23 Mid-Continent Oil & Gas Assn. (La.-Ark. Division annual membership meeting), Roosevelt Hotel, New Orleans, La.

26-27 Independent Oil Compounders Assn. (annual meeting), Hotel Bismarck, Chicago, Ill.

25-28 American Institute of Chemical Engineers, Lake Placid Club, Lake Placid, N. Y.

27-28 Ohio Petroleum Marketers Association Fall Conference and Golf Tournament, Netherland Plaza Hotel and Maketewah Country Club, Cincinnati, Ohio

OCTOBER, 1955

2-5 AIME Petroleum Branch (Fall meeting), Roosevelt Hotel, New Orleans, La.

2-6 ASTM Committee D-2, Petroleum Products and Lubricants, Statler Hotel, Washington, D. C.

3-7 American Institute of Electrical Engineers (Fall general meeting), Morrison Hotel, Chicago, Ill.

9-15 American Petroleum Institute Oil Progress Week

11-15 Society of Automotive Engineers, Hotel Statler, Los Angeles, Calif.

12-13 South Dakota Independent Oil Men's Assn., Mitchell, S. D.

18-22 National Safety Council (43rd National Safety Congress and Exposition), Chicago, Ill.

24-26 American Standards Assn. (annual meeting), Sheraton Park Hotel, Washington, D. C.

27-29 Rocky Mountain Oil & Gas Assn. (annual convention), Cosmopolitan Hotel, Denver, Colo.

23-25 National Association of Oil Equipment Jobbers (5th Annual Meeting), Hotel President, Kansas City, Mo.

31 to Nov. 1 Independent Petroleum Assn. of America (annual membership meeting), Jefferson Hotel, St. Louis, Mo.

31 to Nov. 2 NLGI ANNUAL MEETING, EDGEWATER BEACH HOTEL, CHICAGO, ILL.

31 to Nov. 2 Society of Automotive Engineers (transportation meeting), Chase Hotel, St. Louis, Mo.

NOVEMBER, 1955

2-4 Society of Automotive Engineers (diesel engine meeting), Chase Hotel, St. Louis, Mo.

9-10 Society of Automotive Engineers (fuels and lubricants meeting), Bellevue-Stratford Hotel, Philadelphia, Pa.

13-18 American Society of Mechanical Engineers (75th anniversary meeting), Hilton & Blackstone Hotels, Chicago, Ill.

14-17 American Petroleum Institute (35th annual meeting), Mark Hopkins, Fairmont, St. Francis, and Palace Hotels, San Francisco, Calif.

16 American Petroleum Institute (OIIC Steering Committee meeting), San Francisco, Calif.

17 National Industrial Conference Board (general session), Bellevue-Stratford Hotel, Philadelphia, Pa.

27-30 American Institute of Chemical Engineers (annual meeting), Statler Hotel, Detroit, Mich.

DECEMBER, 1955

6-7 Petroleum Packaging Committee of Packaging Institute, Ben-

jamin Franklin Hotel, Philadelphia, Pa.

8-9 American Petroleum Institute (OIIC meeting), Waldorf-Astoria Hotel, New York, N. Y.

11-14 American Society of Agricultural Engineers (Winter meeting), Edgewater Beach Hotel, Chicago, Ill.

JANUARY, 1956

9-13 SAE Annual Meeting, Sheraton-Cadillac Hotel and Hotel Statler, Detroit, Mich.

APRIL, 1956

18-20 National Petroleum Association, Cleveland, Ohio

JUNE, 1956

3-8 SAE Summer meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

SEPTEMBER, 1956

12-14 National Petroleum Association, Atlantic City, N. J.

NOVEMBER, 1956

1-2 SAE National Diesel Engine Meeting, Drake Hotel, Chicago, Ill.

8-9 SAE National Fuels and Lubricants Meeting, The Mayo, Tulsa, Okla.

APRIL, 1957

16-18 National Petroleum Association, Cleveland, Ohio

SEPTEMBER, 1957

11-13 National Petroleum Association, Atlantic City, N. J.

APRIL, 1958

16-18 National Petroleum Association, Cleveland, Ohio

SEPTEMBER, 1958

10-12 National Petroleum Association, Atlantic City, N. J.

CORRECTION

In the April 1955 issue of the SPOKESMAN Richard H. Leet's article was titled "Thickener Particle Dimensions . . . and Lubricating Consistency Grease." It should read "Thickener Particle Dimensions . . . and Lubricating Grease Consistency."

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